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Veröffentlichungsversion / Published Version
Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:

Braumann, A. (2020). Amazon's HQ2 Site Selection Criteria: The New 'Gold Standard' in FDI Decision-Making. *Urban Planning*, 5(3), 403-417. <https://doi.org/10.17645/up.v5i3.3207>

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Article

Amazon's HQ2 Site Selection Criteria: The New 'Gold Standard' in FDI Decision-Making

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Submitted: 29 April 2020 | Accepted: 24 July 2020 | Published: 29 September 2020

Abstract

In 2017–2018, Seattle-based Tech behemoth Amazon executed a highly publicised location-finding process for a \$5 billion investment project, dubbed 'HQ2'. Owing to the combination of high investment volume and the company's unique public exposure, the HQ2 process is on course to becoming a basic yardstick for future foreign direct investment (FDI) projects all over the world. This article compiles the company's previously unpublished site selection criteria and develops an evidence-based system of investment decision arguments which is employed to test the currently dominant approaches in location decision theory—behavioural, neoclassical, and institutional. Our results identify gaps vis-à-vis this emerging 'Gold Standard' and we propose the addition of a fourth, project-oriented approach to theory to fill the detected shortcomings. Furthermore, this system equips policymakers with a tool to evaluate their investment attraction strategies based on the decision criteria extracted from the HQ2 process.

Keywords

Amazon; economic policy; foreign direct investment; HQ2; impact assessment; local economic development; location decision; policy; urban development

Issue

This article is part of the issue "Planning for Local Economic Development: Research into Policymaking and Practice" edited by Godwin Arku (University of Western Ontario, Canada) and Evan Cleave (Ryerson University, Canada)

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1. Introduction

In a market-based economy, local economic development depends on the potential to attract business investments from within or abroad. Location theory offers a way to describe and formalize this potential by proposing a set of criteria, or 'location factors': They are where place-based policies meet investors' interests, where location theory meets business practice. This article will focus on those criteria.

We base our analysis on one of the global technology sector's largest and best-documented investment projects of the late 2010s, US e-commerce giant Amazon's quest for a location for its second headquarters (henceforth referred to as HQ2). Following Liu and Muro (2017), we interpret this project as a signal of what investors consider state-of-the-art in urban economic de-

velopment. Cities and regions that want to attract business investments from the tech-sector will have to deal with similar requests from potential investors.

Trying to add value to both research in location theory and local economic development practice, our central research questions aim to extract and analyse this project's decision criteria: What were the decision criteria applied in the location-finding process of Amazon's HQ2? How do they align with recent scholarly discussion? And what can policymaking learn from it?

By answering these questions, we detect and address existing gaps in the literature on location decision theory and offer a tool to identify gaps in individual regions' policy setup. First, we provide a literature review of location decision theory. Then we present the project 'Amazon HQ2,' including a critical discussion. Next, we discuss in detail the criteria applied throughout the pro-

cess. We develop a simple quantitative model that allows us to relate this process with location decision theory on a question-by-question basis. We use the results to comment on current literature and propose a conceptual extension to fill the gaps detected. Policymakers are equipped with a tool to evaluate their investment attraction strategies based on the dataset we extracted.

2. Literature Review

Discussion around the optimal location of business activities has a long history: Von Thünen (1826) delivered a seminal work arguing for the importance of factor distance to the definition of rent levels. Marshall (1890) pioneered the concept of industrial districts, a cornerstone of regional economics. The first to explicitly introduce and cluster location factors into theory was Weber (1909). Focused on the potential of minimising costs, he established the cost of transport, the cost of labour and (positive) costs of economic agglomeration as driving forces behind economic specialisation. Christaller (1933) built on this approach, deriving a concept for spatial hierarchy of locations and economic activities. The relationship between different locations was formalised by Lösch (1944). Starting in the 1960s, several researchers tried to consolidate location theory, including Böventer (1962) and Alonso (1964). However, no single dominant paradigm has evolved over the last decades (Pellenbarg, van Wissen, & van Dijk, 2002).

Hayter (1997) clustered competing strands of location theories into three approaches: behavioural, neo-classical, and institutional. The neoclassical approach is based on explicit strategies to reduce costs and maximize profits. In integrating categories such as transport costs, labour costs, or external economies, the neoclassical approach is heavily indebted to Weber (1909). Aiming to understand and define the ‘optimal’ behaviour of agents in economic terms, it is based on concepts of rationality and perfect information. The behavioural approach is situation-sensitive and embraces possibility. It does not depart from the concept of perfect information, but its agents usually have to tackle a situation defined by lack of information or asymmetrical information. In this perspective, factors of location are not uniform and differ between locations (Arauzo & Manjón, 2004). However, decisions are based on non-economic factors. This approach gives special importance to the person in charge of the (location) decision—usually the entrepreneur (Ferreira, Fernandes, Raposo, Thurik, & Faria, 2016, p. 988). The neoclassical and the behavioural approach have one view in common: Companies choose actively from a number of alternatives in an environment that is basically static—a surface of location factors, or a ‘bed of information’ that is processed by the firm (Hayter, 1997). From the 1980s onward, this rather mechanical view of locational behaviour was increasingly being questioned. A variety of strands in research converged on the common belief that economic processes in space are predominantly

shaped by society’s cultural institutions and value systems. They accentuated the social and cultural context—institutions—in which behaviour is embedded over objective decision-making (Ferreira et al., 2016, p. 988).

Storper and Scott’s (2009) work on the causes of urban growth argues for the importance of locally agglomerated systems of production and work. Glaeser (2005) recommends that policymakers focus on education investment, low tax rates, crime reduction, and new housing development. Clark, Lloyd, Wong, and Jain (2002) stress the importance of facilities that provide distraction and amusement, while Florida (2004) advocates building “diverse, tolerant communities.” Schmenner (1982) derives corporate location decisions from microdata. Bartik (2019) analyses the competition between local and regional governments in the USA with regard to incentives and offers propositions for policymakers on how to deal with this situation. Important works based on Hayter’s clustering include Arauzo-Carod, Liviano-Solis, and Manjón-Antolín (2010), Brouwer, Mariotti, and van Ommeren (2004) or Ferreira et al. (2016). Our analysis follows Ferreira et al. (2016), who attribute 29 location factors to Hayter’s three approaches (Table 1).

3. Amazon’s Quest: A Project Set to Become the ‘Gold Standard’ in Investment Location Decision

3.1. From Zero to Hero

Much has been written about a company that has become a household name around the world: Amazon.com, Inc. The venture that started in Seattle in the middle of the 1990s as an online bookstore, diversified over two decades into e-commerce, cloud computing, digital streaming, and artificial intelligence (Noe & Weber, 2019). By the late 2010s, little more than 20 years after its website was launched on July 16, 1995, Amazon was one of the biggest companies worldwide (Figure 1). Total revenues in 2017 were reported as \$178 billion and a gross profit of \$65,9 billion; its employment rolls have expanded from 33,700 in 2010 to 566,000 in 2017, and all these indicators were predicted to approximately double by 2020 (Macrotrends, 2020). Against this backdrop, in September 2017 the company launched the project that would establish HQ2.

3.2. Request for Proposals

On September 7, 2017, Amazon published an eight-page request for proposals (RFP; Amazon, 2017). It invited cities and states in North America to come up with proposals for a suitable site to host a major investment project:

The Project is a second corporate headquarters (HQ2), at which Amazon will hire as many as fifty thousand (50,000) new full-time employees with an average annual total compensation exceeding one hundred thou-

Table 1. Approaches to company location.

Behaviour (B)	Neoclassical (N)	Institutional (I)
B1. The founder, managers and employees want to live in this location	N10. Distance between the company and urban centres	I22. Company incubator
B2. Proximity to the founder's residence	N11. Distance to markets and the cluster scale	I23. Access to knowledge generated by universities or research centres
B3. Climate	N12. Road infrastructures	I24. Location close to administrative centres
B4. Good housing standards	N13. Geographic specialisation	I25. Access to science parks
B5. Local community attitude to business	N14. Human resource skills and qualifications	I26. R&D incentives, employment creation or other incentives
B6. Recreational and leisure activities	N15. Industrial real estate costs	I27. Proximity to teaching institutions
B7. The founder was born in the community	N16. Costs of labour	I28. Technological fairs
B8. Good means of access	N17. Population density	I29. Renowned business leaders in the region
B9. Entrepreneur financial capacity	N18. Level of local economic activity in the company location	
	N19. Other physical infrastructures (railroads, airports, telecommunications, etc.)	
	N20. Proximity to raw materials	
	N21. Proximity to services	

Source: Ferreira et al. (2016, p. 989).

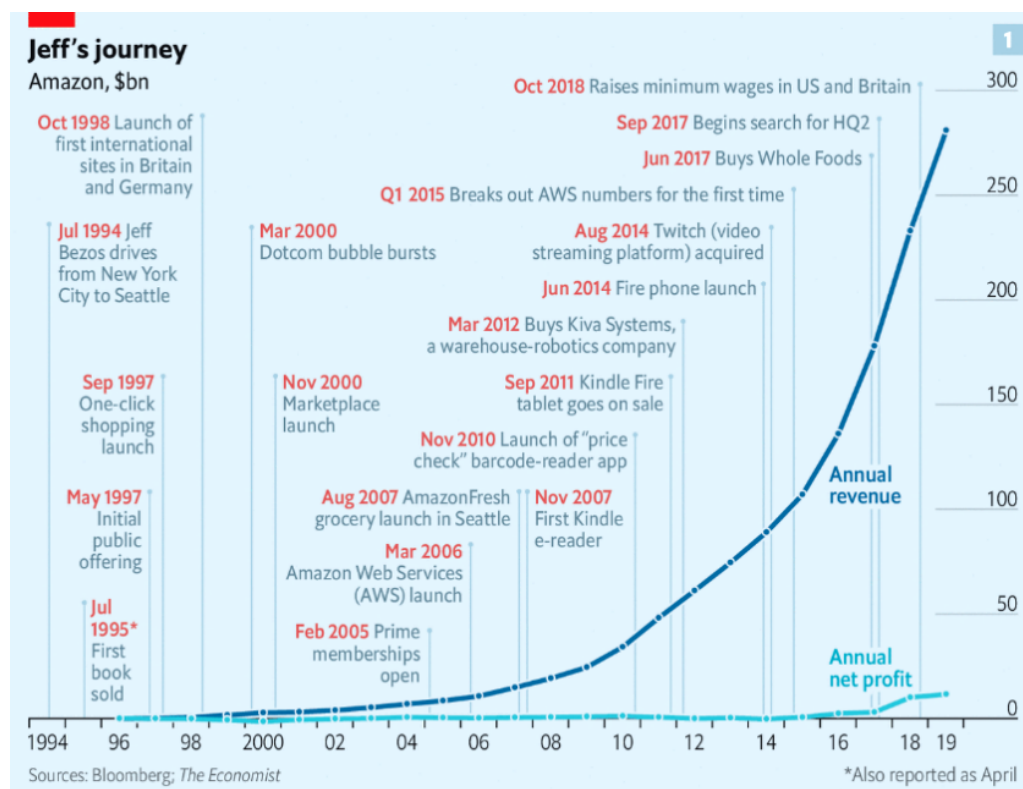


Figure 1. Timeline of Amazon's corporate development 1994/1995–2019. Source: "Can Amazon keep growing like a youthful startup?" (2020, p. 15).

sand dollars (\$100,000) over the next ten to fifteen years, following commencement of operations. The Project is expected to have over \$5 billion in capital expenditures. (Amazon, 2017, p. 2)

After providing more technical and financial details on the project, the RFP finished with the following appeal to US cities:

As this is a competitive Project, Amazon welcomes the opportunity to engage with you in the creation of an incentive package, real estate opportunities, and cost structure to encourage the company's location of the Project in your state/province. (Amazon, 2017, p. 7)

So the game was on. Complying with the tight six-week-deadline set for October 19, 2017, the request resulted in responses from 238 locations. Most proposals were of the type “glossy marketing pitches, with slick graphics and broad proposals for why Amazon should come to their regions” (Weise, 2018a). A dedicated open-source project collects and presents these proposals, accessible for those who are interested to dig deeper into the enormous efforts that competing governments poured into replying to this short invitation (reflect.io, 2020). Figure 2 shows three renderings of the proposed sites. New York's

proposal for a Long Island site would gain special notoriety later in the process.

3.3. A Shortlist of 20 Cities

On January 8, 2018, Amazon sent out a press release (shown in Figure 3) communicating a shortlist of the 20 cities it intended to continue the selection process with:

Amazon evaluated each of the proposals based on the criteria outlined in the RFP to create the list of 20 HQ2 candidates that will continue in the selection process. In the coming months, Amazon will work with each of the candidate locations to dive deeper into their proposals, request additional information, and evaluate the feasibility of a future partnership that can accommodate the company's hiring plans as well as benefit its employees and the local community. Amazon expects to make a decision in 2018. (Amazon, 2018a)

The shortlist reveals two broad clusters of places: larger, more expensive coastal tech hubs and smaller, more affordable regional business centres in the middle of the country (Parilla, 2018a). What exactly led the company to select these 20 cities is not known, thus en-



Figure 2. Examples of renderings of proposed sites. From left to right: Toronto (Toronto Global, 2017, p. 11), New York (New York Metro Area, 2018, p. 72), Boston (City of Boston, 2017, pp. 63–64).

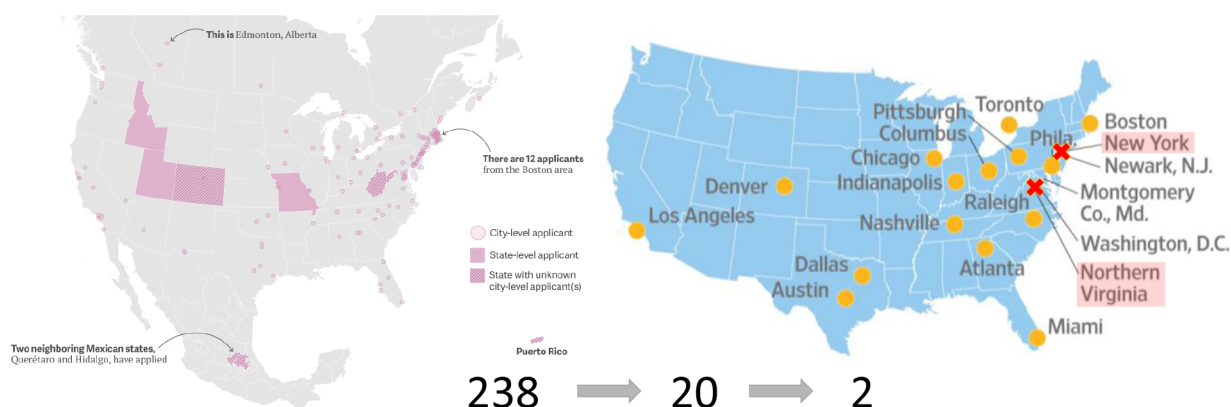


Figure 3. From left to right: Map of the 238 places that bid in the first round for Amazon's next headquarters and Amazon's selection of 20 places for further negotiations with New York and Arlington, Virginia highlighted. Source: Authors' own processing based on Griswold (2017) and Stevens (2018).

gendering speculation. No regulation obliged the company to make its reasons for any decision transparent to the public.

3.4. Request for Information

After announcing the shortlist in January 2018, Amazon presented the 20 candidate cities with a 29-page Request for Information (RFI) that was kept confidential by all sides. Answering it “required far more precision and was more about practicalities than flash. It asked cities to respond by early March with a huge text document punctuated only with a few maps” (Weise, 2018b). The details of most proposals were therefore kept secret—as was any information about the various incentives that were offered to Amazon. Probably by accident, New York’s 253-page response to the RFI, code-named *Project Clancy*, was made public. Although the city administration was quick to delete the document, it is still available online (City of New York, 2018). We reconstructed the original 29-page RFI from this proposal. It is available online as supplementary material to this article and constitutes, together with the original RFP, the basis of our analysis of Amazon’s location decision criteria.

3.5. Deciding on Two Cities

In November 2018, after concluding negotiations with the 20 cities on its shortlist, Amazon announced it would open not one, but two new headquarters:

Amazon (NASDAQ: AMZN) today announced that it has selected New York City and Arlington, Virginia, as the locations for the company’s new headquarters. Amazon will invest \$5 billion and create more than 50,000 jobs across the two new headquarters locations, with more than 25,000 employees each in New York City and Arlington. The new locations will join Seattle as the company’s three headquarters in North America. (Amazon, 2018b)

3.6. Leaving New York

An intense debate took off when the agreement between New York and Amazon was made public. After three months of public discussions focussing on the use of public subsidies, gentrification, and the rising cost of living, Amazon cancelled its plans for HQ2 in New York. This decision was interpreted as a blow to the efforts of diversifying the city’s economy by making it an inviting location for the technology industry (Goodman, 2019). However, Amazon did not completely turn away from the city: In December 2019, less than a year after cancelling its HQ2 investment there, the company announced the opening of a new, 1,500-employee office in Manhattan (Eugene, 2019).

The proposed investment in Arlington, Virginia went ahead as planned: Arlington County unanimously ap-

proved Amazon’s proposal for the construction of two HQ2 towers in December 2019. Construction subsequently started in early 2020 and is expected to be completed in 2023 (Graf & Salazar, 2019).

3.7. Critical Discussion of the HQ2 Process

Much scholarly attention has been attributed to the shifting power balance between location and investor: Brenner and Theodore (2002) put an early focus on the interplay between regulation and market-oriented projects from a spatio-political perspective. Carr and Hesse (2020) analyse urban governance in the context of the ‘smart-city’ concept. Ioannou, Nicolaou, Serrao, and Spiliopoulou (2019) highlight the interconnectedness of large urban developments, foreign direct investment, and a shifting power balance in urban development.

Othengrafen and Levin-Keitel (2019, p. 120) cluster the different roles of planners, and Cleave, Arku, and Chatwin (2019) analyse the work of private sector consultants in place-based economic development strategies: City representatives take on reactive or moderating roles. When those actors are confronted with a ‘taskable’ inquiry of the type Amazon presented, they tend to show a tendency to comply which results in public institutions ceding the driving seat in urban planning to private companies.

Throughout the whole process of HQ2, Amazon submitted its counterparts to extremely tight deadlines (Figure 4). Parilla (2018b) interprets the six-week deadline as a stress test for local communities that would:

Test which places could activate their institutional networks to respond with speed and comprehensiveness....The quick turnaround has limited the time and space for public reflection and vetting of the bid. Public transparency has been severely lacking in the process, and the 20 shortlisted cities have all signed non-disclosure agreements.

This view corresponds with Cleave et al.’s (2019) analysis of how city representatives react to ‘taskable’ inquiries. Others such as Florida (2018) and Gupta (2019) interpret HQ2 primarily as an exercise in setting up a comprehensive database on investment opportunities and frameworks in American cities.

Public subsidies represent another specific arena for the power play between cities and private companies. Depending on the estimate, annual expenditure from US local and state governments on incentives ranges between \$45 and \$80 billion, depending on the estimate (Parilla, 2018b). The Website Citylab published a report on what cities actually offered Amazon, with incentive packages from local and state governments in Maryland and New Jersey reaching up to \$7 billion (Holder, 2018). This sum is even more impressive when compared to the ‘merely’ \$5 billion that the company was offering to invest over 15 to 17 years. Bartik (2019) advises policymak-

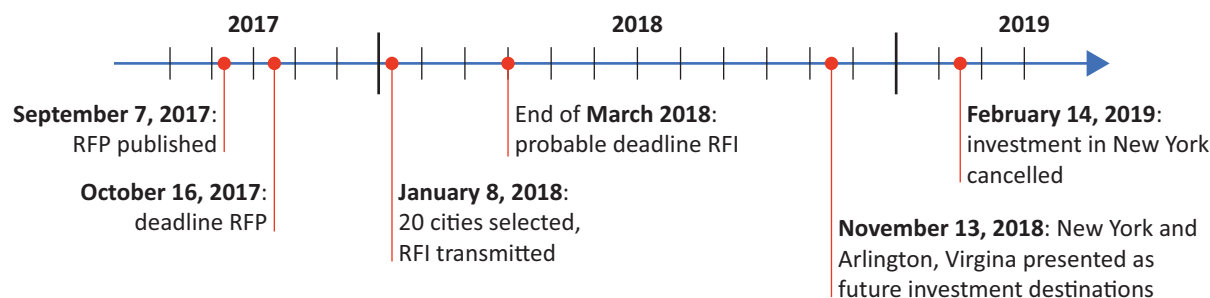


Figure 4. Timeline of the HQ2 decision process.

ers on how to deal with competition among local and regional governments when offering incentives.

4. Decision Criteria Laid Out by Amazon

In this section, we briefly present documents and decision criteria that potential investment locations were confronted with by Amazon in the course of the HQ2 process. Our hypothesis is that these criteria will, due to Amazon's global status as an example to follow, become standard among investment projects over the coming years. This view is supported by a blog post for the Harvard Business Review by Amy Liu and Mark Muro from Brookings Institution:

Amazon's selection criteria, as described in the company's request for proposal, sets out a compelling list of the attributes cities must have if they aspire to be a serious part of the America's growing digital economy....Amazon is also signalling very clearly and publicly what the market demands for modern, state-of-the-urban economic development going forward. (Liu & Muro, 2017)

4.1. Methodology

We will base our analysis on two documents prepared by Amazon in the course of the HQ2 location decision: the widely shared RFP (Amazon, 2017) and the confidential RFI (see supplementary material). The RFP is a relatively short document of eight pages that still exhibits a

strong focus on the description of the planned project. We reconstructed the originally 29-page long RFI from a confidential document titled *Project Clancy* (City of New York, 2018).

We use a mixed-method qualitative content analysis approach proposed by Mayring (2014) for the analysis of the two documents. This method is based on the assignment of categories to the text as a qualitative step, working through many text passages and the analysis of frequencies of categories as a quantitative step (Mayring, 2014, p. 10). For the execution of these tasks, we referred to QCMap developed by Letz (2020), an open-access web application for systematic text analysis in scientific projects based on the techniques of qualitative content analysis. Fenzl and Mayring (2017) present the application in detail. Using QCMap, we extracted a numbered total of 794 items from the two documents. Items that are of topic-setting quality (e.g., #219: Describe the largest social challenges your community is facing) are defined as 'question,' while items that refer to content that depends on those questions are defined as 'sub-question' (e.g., #220: Describe success measures for current and proposed programs). The complete dataset is available online as supplementary material to this publication. Table 2 provides an overview of the two documents.

4.2. Request for Proposals

This is the principal document published on September 7, 2017 (Amazon, 2017). Over eight pages it describes the

Table 2. Quantitative dimensions of documents RFP and RFI.

Document/Section	Items Extracted			Page Count	
	Total #	# Questions	# Sub-Questions	Original document	RFP/RFI/section of RFI
RFI total	607	236	371	29	253
1 Talent	139	65	74	n.n.	74
2 Growth	102	46	56	n.n.	36
3 Real Estate	255	103	152	n.n.	105
4 Taxes and Tax Policy	43	11	32	n.n.	14
5 Incentives	68	11	57	n.n.	24
RFP total	187	91	96	8	29
Total RFP+RFI	794	327	467	37	n.n.

company and provides basic details on its HQ2 project. A special focus is dedicated to the requirements for the future site, to specific characteristics of the metropolitan area where it shall be located, as well as the specific conditions of the labour market for tech workers. Questions and comments are mostly general in nature (#723: The Project requires an expeditious timetable for the location decision and the commencement of construction; or #738: We want to invest in a community where our employees will enjoy living, recreational opportunities, educational opportunities, and an overall high quality of life), although some ask for detailed information (#736: We encourage testimonials from other large companies).

4.3. Request for Information

The RFI (see supplementary material) was sent out by Amazon to the 20 locations selected in the first round. It collected data and preliminary commitments from those locations, which would later serve as a basis for negotiations. Locations were expected to reply to this document within approximately ten weeks (Weise, 2018b). The RFI was organized in five sections. We extracted a total of 607 items (236 questions, 371 sub-questions) from the document. Figure 5 gives a visual impression of the keywords used in the different sections.

4.3.1. Talent

The first section of the RFI is dedicated to the labour market, education (with a focus on STEM), population composition and development (with a focus on migration and integration), as well as an ample field of policies. Questions are very detailed (#93: A comparison between annual objectives and actual performance for each student group) and frequently ask for both historical data (#6: Changes in education level in your community over the last five years) as well as information on or plans for future policies (#82: Describe how education programs are funded). It covers 74 of *Project Clancy's* 253 pages (29%), its second-largest section.

4.3.2. Growth

The second section is dedicated to general development issues, with a strong focus on housing and quality of life.

It approaches the topic from both a rather individual perspective (#156–16: Current Housing Stock [availability, mix of rental versus owned, granular details on a few example neighbourhoods if available, focus on [i] 3 bedroom, 2 bath, single-family homes and [ii] 1 and 2 bedroom apartments]) as well as from a macro-perspective (#191: Data on hate crimes). Approaches to policymaking (#241: Describe what your community has done to encourage STEM professional development in your immigrating and minority populations) are also important.

4.3.3. Real Estate

The section on real estate is the central piece of the RFI. A total of 255 items were identified (103 questions, 152 sub-questions), representing 42% of all 607 items. Furthermore, these questions are expected to be answered independently for every site proposed—in the case of New York for two sites (Long Island and Midtown West), covering a total page-count of 105 pages. The questions cover a wide range of topics associated with the proposed sites—location, infrastructure, availability, neighbourhood, accessibility, usability, topography, utilities, as well as the costs associated with all of these. The company openly addresses incentives (#277: Will a government agency make Site available to the Project at no cost?). A special focus is put on practicalities such as data on the reliability of existing infrastructure, ways to define commitment of public institutions, possibilities of future extensions and several questions on the timeline of expected interventions. The questions even become personal, asking for names, contact details, and term limits of officials and personnel in charge of individual tasks (#359: The person assigned to work with the Project; and #360: The relevant contact information for that person).

4.3.4. Taxes and Tax Policy

The short section on Taxes (14 pages, 43 items) asks for general information on the location's tax regime. It presents several individual cases, for which the tax burden should be calculated (#538: Describe in detail the typical State/Commonwealth/Province and local tax burden that a company worker might anticipate if HQ2 were built on Site and the worker lived in your community. Assume the worker earns \$100,000 annually, excluding benefits). Most questions relate, directly or indirectly, to



Figure 5. Word clouds of RFI's 607 items, by section. From left to right: talent, growth, site, taxes and tax policy, incentives.

the possibility of reducing the existing tax burden. The future development of the tax regime is also targeted (#539: Detail any State/Commonwealth/Province tax legislation that has been proposed).

4.3.5. Incentives

The final section is very forthcoming on the topic of incentives, asking for detailed information (and commitment) on a wide range of possible incentives, even “offered by the State/Commonwealth/Province and Local Community” (#540–541, 547: Detail each incentive by real estate site. If the incentive is uncertain or is not guaranteed, an explanation of the factors that contribute to that uncertainty and an estimate of the level of certainty).

Similar to the section on real estate, some questions become personal (#606: Project manager/ombudsman to coordinate/expedite approvals).

5. Analysis

In order to relate the documents to scholarly discussion, we submitted the 794 items to a further process of coding following the methodology proposed by Mayring (2014). We tried to relate all items to the 29 location factors proposed by Ferreira et al. (2016, p. 989). This resulted in the attribution of one or more factors to a total of 566 items (71,3% ‘attribution rate’). No meaningful attribution was possible for 228 items (28,7% ‘non-attribution rate’). Figure 6 lists the results by factor,

	RFP+RFI	RFP	RFI	1 Talent	2 Growth	3 Real Estate	4 Taxes and Tax Policy	5 Incentives
Factors \ number of items	794	187	607	139	102	255	43	68
Behaviour	183 (23%)	44 (23,5%)	139 (22,9%)	20 (14,4%)	64 (62,7%)	47 (18,4%)	7 (16,3%)	1 (1,5%)
B1: The founder, managers and employees want to live in this location	46 (5,8%)	16 (8,6%)	30 (4,9%)	3 (2,2%)	23 (22,5%)	-	4 (9,3%)	-
B2: Proximity to the founder's residence	2 (0,3%)	2 (1,1%)	-	-	-	-	-	-
B3: Climate	-	-	-	-	-	-	-	-
B4: Good housing standards	42 (5,3%)	4 (2,1%)	38 (6,3%)	1 (0,7%)	36 (35,3%)	1 (0,4%)	-	-
B5: Local community attitude to business	33 (4,2%)	9 (4,8%)	24 (4,0%)	16 (11,5%)	5 (4,9%)	-	3 (7,0%)	-
B6: Recreational and leisure activities	33 (4,2%)	6 (3,2%)	27 (4,4%)	-	20 (19,6%)	7 (2,7%)	-	-
B7: The founder was born in the community	-	-	-	-	-	-	-	-
B8: Good means of access	50 (6,3%)	10 (5,3%)	40 (6,6%)	-	-	39 (15,3%)	-	1 (1,5%)
B9. Entrepreneur financial capacity	10 (1,3%)	5 (2,7%)	5 (0,8%)	5 (3,6%)	-	-	-	-
Neoclassical	403 (50,8%)	92 (49,2%)	311 (51,2%)	108 (77,7%)	26 (25,5%)	144 (56,5%)	3 (7%)	30 (44,1%)
N10. Distance between the company and urban centres	19 (2,4%)	11 (5,9%)	8 (1,3%)	-	1 (1%)	7 (2,7%)	-	-
N11. Distance to markets and the cluster scale	9 (1,1%)	6 (3,2%)	3 (0,5%)	3 (2,2%)	-	-	-	-
N12. Road infrastructures	20 (2,5%)	14 (7,5%)	6 (1%)	-	-	6 (2,4%)	-	-
N13. Geographic specialisation	48 (6,0%)	4 (2,1%)	44 (7,2%)	41 (29,5%)	1 (1%)	2 (0,8%)	-	-
N14. Human resource skills and qualifications	130 (16,4%)	27 (14,4%)	103 (17%)	87 (62,6%)	6 (5,9%)	4 (1,6%)	-	6 (8,8%)
N15. Industrial real estate costs	108 (13,6%)	29 (15,5%)	79 (13%)	-	1 (1,0%)	51 (20%)	3 (7,0%)	24 (35,3%)
N16. Costs of labour	11 (1,4%)	9 (4,8%)	2 (0,3%)	-	2 (2,0%)	-	-	-
N17. Population density	19 (2,4%)	2 (1,1%)	17 (2,8%)	11 (7,9%)	6 (5,9%)	-	-	-
N18. Level of local economic activity in the company location	25 (3,1%)	5 (2,7%)	20 (3,3%)	19 (13,7%)	-	1 (0,4%)	-	-
N19. Other physical infrastructures (railroads, airports, telecommunications, etc.)	126 (15,9%)	24 (12,8%)	102 (16,8%)	-	1 (1,0%)	96 (37,6%)	-	5 (7,4%)
N20. Proximity to raw materials	-	-	-	-	-	-	-	-
N21. Proximity to services	21 (2,6%)	4 (2,1%)	17 (2,8%)	-	10 (9,8%)	7 (2,7%)	-	-
Institutional	195 (24,6%)	39 (20,9%)	156 (25,7%)	64 (46%)	7 (6,9%)	8 (3,1%)	9 (20,9%)	68 (100%)
I22. Company incubator	5 (0,6%)	-	5 (0,8%)	5 (3,6%)	-	-	-	-
I23. Access to knowledge generated by universities or research centres	47 (5,9%)	10 (5,3%)	37 (6,1%)	34 (24,5%)	-	1 (0,4%)	-	2 (2,9%)
I24. Location close to administrative centres	2 (0,3%)	1 (0,5%)	1 (0,2%)	-	-	1 (0,4%)	-	-
I25. Access to science parks	9 (1,1%)	1 (0,5%)	8 (1,3%)	3 (2,2%)	1 (1,0%)	3 (1,2%)	-	1 (1,5%)
I26. R&D incentives, employment creation or other incentives	110 (13,9%)	26 (13,9%)	84 (13,8%)	2 (1,4%)	2 (2%)	3 (1,2%)	9 (20,9%)	68 (100%)
I27. Proximity to teaching institutions	50 (6,3%)	5 (2,7%)	45 (7,4%)	42 (30,2%)	1 (1%)	2 (0,8%)	-	-
I28. Technological fairs	5 (0,6%)	1 (0,5%)	4 (0,7%)	2 (1,4%)	-	2 (0,8%)	-	-
I29. Renowned business leaders in the region	15 (1,9%)	2 (1,1%)	13 (2,1%)	10 (7,2%)	3 (2,9%)	-	-	-
items without factor attribution	228 (28,7%)	42 (22,5%)	186 (30,6%)	25 (18,0%)	27 (26,5%)	106 (41,6%)	28 (65,1%)	-

Figure 6. Analysis of location factors attributed to Amazon's HQ2 location decision process.

approach, and document. The first column shows the 29 criteria, grouped by the three respective approaches: behavioural, neoclassical and institutional. The second columns exhibit the results of our analysis, grouped by document(s) or sub-documents. Each cell shows the sum of items in the respective document that could be attributed to the respective factor or approach, followed by the percentage of total items in the respective document in brackets. Cells with a percentage of over 10% are shaded green, cells with a percentage under 2% red.

These results provide us with ample material to discuss the practical relevance of those individual factors developed by location decision theory. In our analysis, we will concentrate on three specific findings: factors that were (1) widely applied in the course of HQ2; (2) factors that were not or were only sporadically used; we also use it as a basis to (3) contribute to the discussion about the competing approaches in theory (behavioural, neoclassical, institutional). Furthermore, we base two propositions on these results: (1) We put forward a new group of factors that should be integrated into location decision theory as a fourth approach and (2) we provide policy-makers with a simple tool to evaluate and discuss their investment promotion strategies.

5.1. Finding I: Location Factors that Stood the HQ2-Test

Figure 7 ranks the 29 factors by attribution rate. Four factors (N14. Human resource; N19. Infrastructure; I26. Incentives; and N15. Real Estate costs) are visibly set apart. Of these four, three stem from the neoclassical approach of location decision theory, one from the behavioural approach.

An interesting opposition can be seen when it comes to the labour market. Whilst availability and qualification (N14) rank first among factors, their cost (N16) is ranked low with markedly reduced attribution rate (16,4% vs. 1,4%). This points to the fact that, in the dense labour market for tech talent, availability trumps cost.

5.2. Finding II: Some Location Factors Have Been Widely Ignored

Three factors (B3. Climate; B7. Place where founder was born; and N20. Raw Materials) are missing completely from Amazon's set of questions. The non-attribution of N20 can be explained by the sector the company is operating in—raw materials are not relevant to its headquarters' business processes. Also, the absence of B7

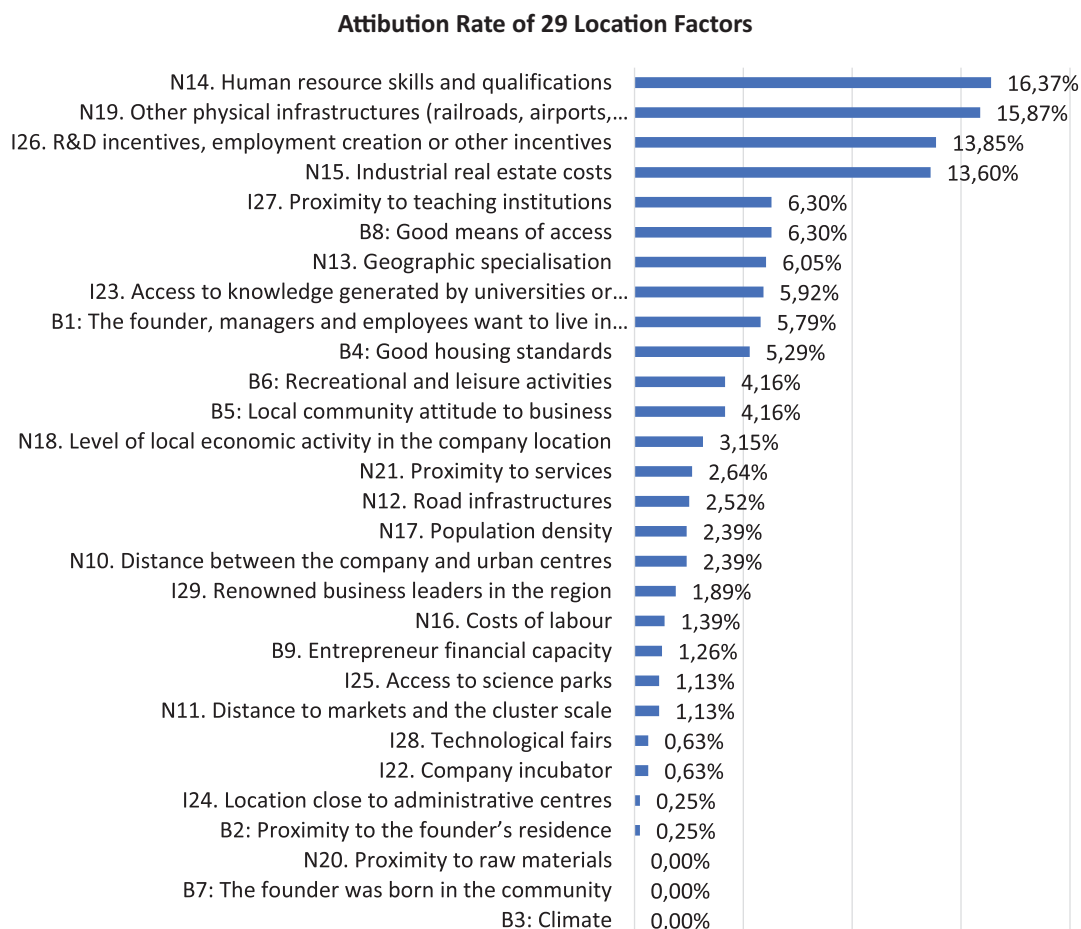


Figure 7. Location factors ranked by attribution rate.

seems to have an obvious explanation: A company with a staff count slowly edging up to reach one million can be expected to be too big to base important decisions on where its founder was born. However, there has been ample speculation about the implicit relevance of this factor throughout the HQ2 process (Dement, 2018; Nickelsburg, 2018). Less obvious is the absence of the third factor, B3 Climate. Recent discussions, especially under the headline topic of sunbelt city development (especially Glaeser, 2005) attribute high importance to this factor. Future research around the importance of climatic factors on business location decisions thus might put more emphasis on the integration of empirical evidence from individual decision processes.

5.3. Finding III: Neoclassical Wins the Approaches' Contest

We presented the historical development of location decision theory over the last two centuries that led to the currently dominant framework of combining the three competing approaches: behavioural, institutional, and neoclassical. In our analysis, the neoclassical approach is by far the most frequently employed by Amazon: More than 50% of all items can be attributed to at least one of this approach's eleven factors (Figure 8). The other two approaches, behavioural and institutional, trail far behind with an attribution rate of less than 25%. The at-

tribution rate does not vary significantly among the two documents, RFP and RFI.

This result is noteworthy, especially for practitioners in investment attraction. Although the criteria employed in the context of HQ2 do include 'soft' factors such as quality of life, environmental quality, culture, or career opportunities, it is still the rationalist, objective neoclassical approach which has been applied most extensively.

5.4. Finding IV: Detecting the Blind Spots

Table 3 looks at factor attribution from a different angle: it shows in how far items from different documents and their sections could *not* be attributed to any one of the 29 location factors proposed by Ferreira et al. (2016). This is the case for a total of 228 out of 794 items, or 28,7%. The non-attribution rate is slightly lower for RFP (22,5%), while the longer and more detailed RFI exhibits a non-attribution rate of 30,6%. Among the document's parts, section 5 (Incentives) stands out with all items attributed. On the other side of the spectrum, sections 3 (Real Estate) and 4 (Taxes and Tax Policy) also stand out with almost every second item not attributed (41,6% and 65,1%, respectively). These findings give us a basis to derive location decision factors that are missing in Ferreira et al. (2016).

As a next step, we ran an additional coding exercise for the 228 items not attributed to any single location

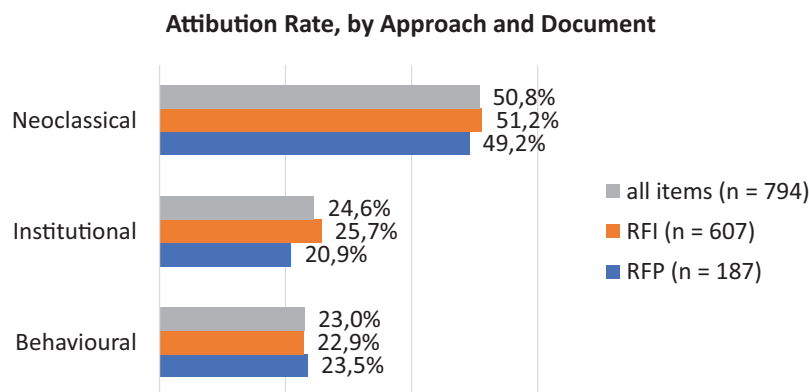


Figure 8. Attribution rate of different approaches.

Table 3. Non-attribution rates by document and section.

Document/Section	Total #	# Items Not Attributed	Non-attribution Rate
RFI total	607	186	30,6%
of which			
1 Talent	139	25	18,0%
2 Growth	102	27	26,5%
3 Real Estate	255	106	41,6%
4 Taxes and Tax Policy	43	28	65,1%
5 Incentives	68	0	0,0%
RFP total	187	42	22,5%
Total RFP+RFI	794	228	28,7%

factor: they were tested for several additional criteria as shown in the left column of Figure 9. These ten additional criteria were derived from (1) a clustering exercise of selected items (colour-coded items in the column ‘marked text’ in our dataset, available online as supplementary material to this publication) and (2) factors inspired by literature (Clark et al., 2002; Florida, 2004; Glaeser, 2005; Schmenner, 1982; Storper & Scott, 2009). The aim was to establish factors that would explain as many of the non-attributed questions as possible. Figure 9 shows the attributions that we obtained through this additional coding exercise. Cells with an attribution rate of 25% or higher are shaded in green, cells with a rate below 10% are shaded in red. We will use these results to propose an extension to theory.

5.5. Proposition I: Extend Location Decision Theory by Integrating a Fourth, Project-Oriented Approach

Based on our results, we propose an extension of the existing, three-dimensional paradigm: The three approaches (behavioural, neoclassical, and institutional) should be broadened by a fourth approach in order to be able to include the gaps we detected. We term this approach ‘Project-Oriented.’ Individual factors that constitute this novel approach are described below.

5.5.1. Site-Related Criteria

Every communication during the HQ2 process put a focus on the desired characteristics of available investment sites. The 29 factors from Ferreira et al. (2016) are not able to adequately account for this importance. When testing the 228 non-attributed items, the new criteria C: characteristics of proposed site, was able to account for 42% of all items, including questions related to terrain,

neighbourhood, infrastructure, etc. Based on these results, we propose formalizing it as an individual factor.

As to the difficulty of applying a common theoretical framework onto heterogeneous site conditions, we suggest following the approach developed by Serra, Psarra, and O’Brien (2018), who developed an interesting method to quantify defining aspects of development sites.

5.5.2. Project-Management Related Criteria

Our analysis showed that basic concepts of project management cannot be adequately attributed by Hayter’s three-pronged approach. This resulted in the non-attribution of items related with aspects of project management such as the project’s timeline, the attribution of responsibilities, the actual availability of resources in a given moment, and the potential of a phased development approach including the possibility of future extensions. Testing for these concepts (in the form of two additional criteria, T and R, see Figure 9) resulted in positive attributions (25.0% and 18.4%, respectively). Building on Schmenner (1982) and Mesly (2017), we, therefore, propose the integration of the following additional decision factors:

- Possibility of phased development and future extensions of the project
- Availability and accessibility of existing resources for the execution of the project
- Ability to comply with project timeline
- Actors carrying responsibility (individual, institutional) and their commitment to the project

Table 4 sums up our proposal for an extended system of location decision approaches and related factors.

	RFP+RFI	RFP	RFI	1 Talent	2 Growth	3 Real Estate	4 Taxes and Tax Policy	5 Incentives
proposed new factors \ items not attributed	228	42	186	25	27	106	28	0
C: Characteristics of proposed site	95 (41,7%)	24 (57,1%)	71 (38,2%)	-	-	71 (67%)	-	-
T: Timeline; actual availability of resources and future extensions	57 (25%)	17 (40,5%)	40 (21,5%)	1 (4%)	-	39 (36,8%)	-	-
P: Policies and Programs	43 (18,9%)	2 (4,8%)	41 (22%)	10 (40%)	15 (55,6%)	15 (14,2%)	1 (3,6%)	-
R: Responsible actors (institutional, personal); ownership structure and their commitment for the investment project	42 (18,4%)	3 (7,1%)	39 (21%)	-	-	34 (32,1%)	5 (17,9%)	-
S: Sustainability / Environment and environmental commitment of government	31 (13,6%)	6 (14,3%)	25 (13,4%)	-	3 (11,1%)	22 (20,8%)	-	-
X: Taxes	29 (12,7%)	1 (2,4%)	28 (15,1%)	-	-	-	28 (100%)	-
E: Evaluations, Studies; (international) rankings	25 (11%)	-	25 (13,4%)	8 (32%)	10 (37%)	7 (6,6%)	-	-
G: Grand challenges, big ideas	20 (8,8%)	6 (14,3%)	14 (7,5%)	5 (20%)	7 (25,9%)	2 (1,9%)	-	-
M: Migration and integration	13 (5,7%)	2 (4,8%)	11 (5,9%)	1 (4%)	10 (37%)	-	-	-
F: Funding structures of public system	10 (4,4%)	-	10 (5,4%)	4 (16%)	1 (3,7%)	5 (4,7%)	-	-

Figure 9. Attribution of ten additional criteria to 228 items previously not attributed.

Table 4. Proposed extension.

Behaviour (B)	Neoclassical (N)	Institutional (I)	Project-Oriented (P)
B1. The founder, managers and employees want to live in this location	N10. Distance between the company and urban centres	I22. Company incubator	P30. Characteristics of proposed site
B2. Proximity to the founder's residence	N11. Distance to markets and the cluster scale	I23. Access to knowledge generated by universities or research centres	P31. Possibility of phased development and future extensions of the project
B3. Climate	N12. Road infrastructures	I24. Location close to administrative centres	P32. Availability and accessibility of existing resources for the execution of the project
B4. Good housing standards	N13. Geographic specialisation	I25. Access to science parks	P33. Ability to comply with project timeline
B5. Local community attitude to business	N14. Human resource skills and qualifications	I26. R&D incentives, employment creation or other incentives	P34. Actors carrying responsibility (individual, institutional) and their commitment to the project
B6. Recreational and leisure activities	N15. Industrial real estate costs	I27. Proximity to teaching institutions	
B7. The founder was born in the community	N16. Costs of labour	I28. Technological fairs	
B8. Good means of access	N17. Population density	I29. Renowned business leaders in the region	
B9. Entrepreneur financial capacity	N18. Level of local economic activity in the company location		
	N19. Other physical infrastructures (railroads, airports, telecommunications, etc.)		
	N20. Proximity to raw materials		
	N21. Proximity to services		

5.6. Proposition II: Tool for Evaluation of Individual Locations

As a support to policymakers, we developed our dataset into a simple tool to evaluate a location's investment attraction position. Based on self-assessment, it computes the position of the location vis-à-vis the factors

and approaches analysed in this article. Two output tables (Figure 10) list the ten factors that the individual location complies with most and least. This input can provide practitioners with a quick route to an evidence-based discussion of how to interpret and further develop their location's investment attraction policies. The complete dataset, including underlying formulas and a short

High level of compliance with HQ2 topics

Relative Position	Approach / Factor	Attribution rate of institution
1	B2: Proximity to the founder's residence	100%
2	I24. Location close to administrative centres	100%
3	B1: The founder, managers and employees want to live in this location	83%
4	N16. Costs of labour	82%
5	N12. Road infrastructures	80%
6	I28. Technological fairs	80%
7	N11. Distance to markets and the cluster scale	78%
8	I25. Access to science parks	78%
9	N15. Industrial real estate costs	77%
10	T: Timeline; actual availability of resources and future extensions	74%

Low level of compliance with HQ2 topics

Relative Position	Approach / Factor	Attribution rate of institution
40	I22. Company incubator	20%
39	I29. Renowned business leaders in the region	33%
38	E: Evaluations, Studies; (international) rankings	36%
37	P: Policies and Programs	37%
36	N13. Geographic specialisation	38%
35	I27. Proximity to teaching institutions	40%
34	N10. Distance between the company and urban centres	42%
33	R: Responsible actors (institutional, personal); ownership structure and their commitment for the investment project	43%
32	N18. Level of local economic activity in the company location	44%
31	N14. Human resource skills and qualifications	49%

Figure 10. Evaluation output of fictional location.

description, is available online as supplementary material to this publication.

6. Conclusion

The overall goal of this work on Amazon's HQ2 location decision process was to develop recommendations for both research in location theory and practice in local economic development. We argued that the formal criteria applied by this highly visible investment project will become a new 'gold standard' for business location decision-making. Policymakers will be confronted with potential investors applying similar decision criteria. For location theory, it is an opportunity to calibrate its dominant assumptions.

Applying a mixed-method qualitative content analysis approach, we extracted Amazon's requirements to potential investment locations and set up a dataset of 794 items. Those were attributed to formalized factors from location decision theory following Ferreira et al. (2016). The result led to four findings: First, our analysis shows that criteria related to human resources, infrastructure, incentives, and real estate costs dominate the HQ2 process. Second, criteria related to a location's climate were not present in the decision process. The higher attractiveness of locations in warmer climates, as captured by discussions around 'sun belt' attractiveness, is thus not supported by our analysis. Third, in the contest of Hayter's (1997) three approaches (behavioural, neoclassical, institutional), Amazon clearly took the side of the neoclassical approach. This is most visible in its list of questions dedicated to talent and real estate. Fourth, we were able to detect gaps in contemporary location decision theory: 29% of items could not be attributed to any of Ferreira et al.'s (2016) criteria. Most of these items target questions around real estate and taxes.

This gap led us to our first proposition. By introducing, testing and clustering, we developed a proposition for an addition to Hayter's (1997) three approaches, called the 'Project-Oriented Approach.' It clusters two groups that our analysis proved were missing in the current three approaches: the site-related criterion (P30. Characteristics of proposed site) and the project-related criteria (P31. Possibility of phased development and future extensions of the project; P32. Availability and accessibility of existing resources for the execution of the project; P33. Ability to comply with project timeline; P34. Actors carrying responsibility (individual, institutional) and their commitment to the project). Those criteria are inherently unique to each potential investment location, yet they proved decisive for the HQ2 decision process. Further research is needed to examine ways to integrate those criteria into quantitative models covering a heterogeneous set of locations.

Our second proposition is directed at policymakers. We developed a simple tool based on our dataset of 794 items derived from the HQ2 process. As a result, it shows an individual location's position vis-à-vis

the criteria applied by Amazon, highlighting areas of strength and weakness. It provides policymakers with evidence for the evaluation of existing investment promotion strategies and the formulation of economic policy. The tool is available online as supplementary material to this publication.

Acknowledgments

Rudolf Giffinger of TU Wien for support and guidance; three anonymous reviewers and the editors in particular for valuable comments and suggestions; Vienna Business Agency for providing a stimulating and enabling work environment; and colleagues from several European investment promotion agencies for inspiring discussions, reflections and their readiness for open exchange.

Conflict of Interests

The author declares no conflict of interest.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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